

AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 1, line 6, as follows:

Example embodiments of the The present invention ~~relates~~ relate to an ink supply device containing ink that is to be provided to an inkjet printer and the like used for a facsimile machine, a copying machine, an OA (Office Automation) equipment printer and the like.

Please amend the paragraph beginning at page 6, line 9, as follows:

DISCLOSURE OF INVENTION

Example embodiments of The present invention ~~is~~ are attained in view of the problems mentioned above. An object of the ~~invention~~ example embodiments is to provide an ink supply device (i) that can absorb a pressure change inside the ink tank, (ii) that is capable of having an increased capacity, as well as (iii) being able to provide a consistent supply of ink. A further object of the ~~present invention~~ example embodiments is aimed at efficiently utilizing the ink stored in the ink tank.

Please amend the paragraph beginning at page 6, line 18, as follows:

In order to achieve the object mentioned above, according to the example embodiments ~~present invention~~, in an ink supply device, which includes an ink tank for containing ink therein and a tank holder for holding the ink tank in a detachable manner, the tank holder includes pressure control means (for example, a circulation needle, an air supply needle, a pressure control needle, a pressure control tank, and the like) for allowing the ink and air to circulate between the tank holder and the ink tank so that an internal pressure of the attached ink tank has a predetermined value.

Please amend the paragraph beginning at page 8, line 16, as follows:

However, because the ink tank of ~~the present invention~~ example embodiments does not include the absorbent material, such pressure change does not occur. Accordingly, the ink can be consistently supplied. Moreover, the ink tank is not discarded with ink remaining in an absorbent material. Accordingly, more efficient ink utilization is possible.

Please amend the paragraph beginning at page 8, line 22, as follows:

According to example embodiments ~~the present invention~~, in order to achieve the object, an ink supply device, which includes an ink tank for containing at least ink therein, includes

capacity changing means for changing a capacity of the ink tank, according to a change in a state of a content inside the ink tank due to an environmental change outside the ink tank.

Please amend the paragraph beginning at page 9, line 18, as follows:

However, as mentioned above, in example embodiments~~the present invention~~, the capacity of the ink tank can be changed by the capacity changing means according to the change in the state of the content. Namely, when, for example, the pressure of the content such as the ink and the air increases due to a surrounding temperature change, the capacity of the ink tank can be increased. When the pressure of the content decreases, the capacity of the ink tank can be decreased. This makes it possible to control a pressure change inside the ink tank caused by the external environmental change.

Please amend the paragraph beginning at page 7, line 10, as follows:

According to example embodiments~~the present invention~~, an ink supply device, which includes an ink tank for containing at least ink therein, includes pressure change control means for controlling a change in pressure, caused by consumption of the ink, inside the ink tank by supplying air to the inside of the ink tank from outside of the ink tank.

Please amend the paragraph beginning at page 11, line 5, as follows:

However, in example embodiments~~the present invention~~, as mentioned above, the pressure change control means can control the pressure change, caused by the consumption of ink, inside the ink tank by supplying the air to the inside of the ink tank from the outside of the ink tank. Namely, by supplying the air into the ink tank as the ink is consumed, the pressure change inside the ink tank due to the consumption of ink and the pressure change due to the temperature change in a case where the ink supply device is left alone for a long time can be controlled.

Please amend the paragraph beginning at page 11, line 19, as follows:

For a fuller understanding of the nature and advantages of example embodiments~~the invention~~, reference should be made to the ensuing detailed description taken in conjunction with the accompanying drawings.

Please amend the paragraph beginning at page 11, line 25, as follows:

FIG.1 illustrates a structure of a main part of an ink supply device according to a first example embodiment of the present invention.

Please amend the paragraph beginning at page 12, line 6, as follows:

FIG.4 illustrates a structure of a main part of the ink supply device according to another example embodiment of the present invention.

Please amend the paragraph beginning at page 12, line 25, as follows:

FIG.9 is a sectional view schematically illustrating a structure of the ink supply device according to yet another example embodiment of the present invention.

Please amend the paragraph beginning at page 13, line 7, as follows:

FIG.12 is a sectional view schematically illustrating a structure of another ink supply device, according to the yet another example embodiment of the present invention.

Please amend the paragraph beginning at page 13, line 10, as follows:

FIG.13 is a sectional view schematically illustrating a structure of yet another ink supply device according to the yet another example embodiment of the present invention.

Please amend the paragraph beginning at page 13, line 18, as follows:

With reference to FIGS.1 through 3, and FIGS.6 through 8, a first example embodiment of the present invention is explained as follows.

Please amend the paragraph beginning at page 13, line 21, as follows:

FIG.1 illustrates a substantial structure of an ink supply device according to the first example embodiment of the present invention. As illustrated in the diagram, the ink supply device includes an ink tank 1 containing ink and a tank holder 5 holding the ink tank 1. The ink tank 1 is arranged to be detachable with respect to the tank holder 5.

Please amend the paragraph beginning at page 16, line 6, as follows:

As illustrated in FIG.2 (a), the side surface of the ink tank 1 on a side attached to the tank holder 5 is made of an inside wall 21 and an outside wall 22. The inside wall 21 includes opening sections 21a through 21d. The outside wall 22 includes opening sections 22a through 22d~~22c~~.

Please amend the paragraph beginning at page 25, line 15, as follows:

As mentioned above, the ink supply device of the ~~present invention~~ example embodiment includes the ink tank 1 containing therein ink and the tank holder 5 holding the ink tank 1 in a detachable manner.

Please amend the paragraph beginning at page 33, line 20, as follows:

Another example embodiment of ~~the present invention~~ is explained with reference to FIGS. 1, 2, 4, and 5 as follows. In description of this embodiment ~~of the present invention~~, elements having functions equivalent to elements in the example embodiment 1 are denoted by the same reference numbers and explanations thereof are omitted.

Please amend the paragraph beginning at page 38, line 25, as follows:

With reference to FIGS. 9 through 14, a third example embodiment ~~of the present invention~~ is explained as follows.

Please amend the paragraph beginning at page 39, line 2, as follows:

FIG. 9 is a sectional view schematically illustrating a structure of an ink supply device according to this example embodiment ~~of the present invention~~. As illustrated in FIG. 9, an ink supply device 101 includes an ink tank 102, a mobile wall (capacity changing means) 103, a first filter (pressure change control means) 104, a second filter (second ink supply means) 105, an ink supply opening 106, a seal film 107, a seal rubber 108, a sealing tape 109, and an air tank 110.

Please amend the paragraph beginning at page 44, line 18, as follows:

The control of the internal pressure in the ink tank 102 of the ~~present invention~~ example embodiment is explained as follows.

Please amend the paragraph beginning at page 50, line 22, as follows:

As mentioned above, the ink supply device 101 of the ~~present invention~~ example embodiment includes the ink tank 102 containing the ink at least inside. The ink supply device 101 also includes the mobile wall (the capacity changing means) 103 and the first filter (the pressure change control means) 104 so as to keep the pressure inside the ink tank 102 at the predetermined value.

Please amend the paragraph beginning at page 52, line 4, as follows:

In the ink supply device 101 according to the example embodiment of the present invention, the mobile wall 103 is provided at the bottom surface of the ink tank 102. However, the structure is not specifically limited to this. For example, the mobile wall may be provided to an upper surface or a side surface of the ink tank 102.

Please amend the paragraph beginning at page 60, line 18, as follows:

As mentioned above, according to the present inventionexample embodiment, in an ink supply device, which includes an ink tank for containing ink therein and a tank holder for holding the ink tank in a detachable manner, the tank holder includes pressure control means (for example, a circulation needle, an air supply needle, a pressure control needle, a pressure control tank, and the like) for allowing the ink and air to circulate between the tank holder and the ink tank so that an internal pressure of the attached ink tank has a predetermined value.

Please amend the paragraph beginning at page 62, line 15, as follows:

However, because the ink tank of the present inventionexample embodiment does not include the absorbent material, such pressure change does not occur. Accordingly, the ink can be consistently supplied.

Please amend the paragraph beginning at page 58, line 5, as follows:

According to the present inventionexample embodiment, as mentioned above, an ink supply device, which includes an ink tank for containing at least ink therein, includes capacity changing means for changing a capacity of the ink tank, according to a change in a state of a content inside the ink tank due to an environmental change outside the ink tank.

Please amend the paragraph beginning at page 69, line 1, as follows:

However, as mentioned above, in the present inventionexample embodiment, the capacity of the ink tank can be changed by the capacity changing means according to the change in the state of the content. Namely, when, for example, the pressure of the content such as the ink and the air increases due to a surrounding temperature change, the capacity of the ink tank can be increased. When the pressure of the content decreases, the capacity of the ink tank can be decreased. This makes it possible to control a pressure change inside the ink tank caused by the external environmental change.

Please amend the paragraph beginning at page 69, line 16, as follows:

According to the ~~present invention~~example embodiment, as mentioned above, an ink supply device, which includes an ink tank for containing at least ink therein, includes pressure change control means for controlling a change in pressure, caused by consumption of the ink, inside the ink tank by supplying air to the inside of the ink tank from outside of the ink tank.

Please amend the paragraph beginning at page 70, line 11, as follows:

However, in the ~~present invention~~example embodiment, as mentioned above, the pressure change control means can control the pressure change, caused by the consumption of ink, inside the ink tank by supplying the air to the inside of the ink tank from the outside of the ink tank. Namely, by supplying the air into the ink tank as the ink is consumed, the pressure change inside the ink tank due to the consumption of ink can be controlled.

Please amend the paragraph beginning at page 70, line 23, as follows:

It is preferable according to the ink supply device of the ~~present invention~~example embodiment that the ink supply device, which includes the capacity changing means, further includes pressure change control means for controlling a change in pressure, caused by consumption of the ink, inside the ink tank by supplying air to the inside of the ink tank from outside of the ink tank.

Please amend the paragraph beginning at page 71, line 18, as follows:

However, in the ~~present invention~~example embodiment, as mentioned above, the pressure change control means can control the pressure change, caused by the consumption of ink, inside the ink tank by supplying the air to the inside of the ink tank from the outside of the ink tank. Namely, by supplying the air into the ink tank as the ink is consumed, the pressure change inside the ink tank due to the consumption of ink can be controlled.

Please amend the paragraph beginning at page 72, line 22, as follows:

It is preferable according to the ink supply device of the ~~present invention~~example embodiment that, in the ink supply device, the ink tank includes a third opening section for supplying the ink contained in the ink tank to the outside; and only the third opening section and the pressure change control means is in communication with the outside of the ink tank.

Please amend the paragraph beginning at page 73, line 10, as follows:

It is preferable according to the ink tank of the present inventionexample embodiment that, in the ink supply device, the capacity changing means is made of an elastic member.

Please amend the paragraph beginning at page 73, line 17, as follows:

It is preferable according to the ink supply device of the present inventionexample embodiment that, in the ink supply device, the capacity changing means changes the ink tank capacity by equal to or more than ten percent with respect to a pressure change per 1kPa inside the ink tank.

Please amend the paragraph beginning at page 74, line 24, as follows:

It is preferable according to the ink supply device of the present inventionexample embodiment that, in the ink supply device, the capacity changing means is arranged to generate a negative pressure inside the ink tank when the use of the ink supply device starts.

Please amend the paragraph beginning at page 75, line 11, as follows:

It is preferable according to the ink supply device of the example embodimentpresent invention that, in the ink supply device, the pressure change control means controls the pressure change inside the ink tank by using the surface tension of the ink on a boundary face between the pressure change control means and the ink inside the ink tank.

Please amend the paragraph beginning at page 75, line 25, as follows:

It is preferable according to the ink supply device of the example embodimentpresent invention that, in the ink supply device, the pressure change control means is made of a filter.

Please amend the paragraph beginning at page 76, line 9, as follows:

It is preferable according to the ink supply device of the example embodimentpresent invention that, in the ink supply device, a mesh radius of the filter is between 25 μ m to 50 μ m.

Please amend the paragraph beginning at page 76, line 20, as follows:

It is preferable according to the ink supply device of the example embodimentpresent invention that the ink supply device includes second ink supply means being provided to a third opening section so as to cover the third opening section, the second ink supply means providing the ink to the outside in a case where the pressure outside the ink tank is equal to or less than a predetermined value.

Please amend the paragraph beginning at page 77, line 13, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the second ink supply means is made of a filter; and the mesh radius of the filter is between 25 μm to 50 μm .

Please amend the paragraph beginning at page 78, line 3, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, surfaces of the filter is caused to be hydrophilic.

Please amend the paragraph beginning at page 78, line 11, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the capacity changing means is provided so that (i) a direction, in which the capacity changing means moves in order to change the capacity, and (ii) a direction, in which the ink supply device moves when the ink supply device is attached to a printing device and used, differ from each other.

Please amend the paragraph beginning at page 79, line 9, as follows:

However, the pressure change due to the movement, accompanied by the acceleration/deceleration, of the ink supply device can be prevented by the structure of the example embodiment present invention.

Please amend the paragraph beginning at page 79, line 13, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the second opening section is provided at a bottom surface of the ink tank.

Please amend the paragraph beginning at page 79, line 24, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the third opening section is provided at a bottom surface of the ink tank; and the second opening section and the third opening section are provided at a substantially same height.

Please amend the paragraph beginning at page 80, line 16, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the capacity changing means is provided inside the ink supply device.

Please amend the paragraph beginning at page 81, line 3, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the first opening section is provided at an upper surface of the ink tank.

Please amend the paragraph beginning at page 81, line 21, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, the first opening section is provided at a bottom surface of the ink tank.

Please amend the paragraph beginning at page 82, line 9, as follows:

It is preferable according to the ink supply device of the example embodiment present invention that, in the ink supply device, inside the ink tank, only the ink and the air is contained.

Please amend the paragraph beginning at page 83, line 1, as follows:

However, according to the ink supply device of the example embodiment present invention, because the absorbent material is not provided inside the ink tank in the ink supply device, the pressure loss does not occur. Therefore, the ink can be supplied consistently. This makes it possible to supply the ink consistently especially even in a case when a large amount of the ink needs to be supplied for speed printing and the like.

Please amend the paragraph beginning at page 83, line 9, as follows:

The example embodiment invention being thus described, it will be obvious that the embodiments of invention may be varied in many ways. Such changes are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

Please amend the paragraph beginning at page 83, line 18, as follows:

It is possible to apply example embodiments of the present invention to a copying machine, a facsimile, a word processor, a printer and the like that use an inkjet system.